PRICE 15¢

TECHNOLOGY DEPT.

SCIENCE NEWS LETTER

PUBLIC LIBRARY
MAR 4 - 1942
DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

February 28, 1942

Converted for War

See Page 131

A SCIENCE SERVICE PUBLICATION

Do You Know?

The *barred owl* is a ventriloquist.

Punch bowls made of pure *ice* are supplied by many ice companies for use at parties.

There is no conclusive evidence that *vitamins* are necessary for the growth of bacteria.

A sheet of *iron* a hundred thousandth of a millimeter thick is as transparent as glass.

There are 18 types of *footgear* in use by the Army; seven types are for use in unusually cold climates.

Total *lumber* cut from California forests equals 85% of the value of total gold mined in that state.

When *tea* was first introduced into Europe, people were advised to drink forty or fifty cups a day of this "divine herb."

Blood donations to the Army-Navy plasma supply increased 100% after the Pearl Harbor attack, the Red Cross reports.

Knit *cotton* underwear, worn by boys and girls, can "take it" longer than rayon, U. S. Department of Agriculture tests show.

Benzedrine, which has received a reputation as a pep-producer, has been found to have practically no effect upon the activity of the sloth.

Beavers make mud pies, then scent them to advertise for mates.

Some species of *fish* never live longer than one year.

Latest technical accomplishment of *television* was the pick-up of the burning Normandie for New York television fans; powerful telescopic lenses covered the Hudson River waterfront.

A self-camouflaging tent and a "mummy"-shaped sleeping bag are the newest equipment for *ski troops,* says the U. S. War Department.

The size of the *human eye* increases only 3½ times during life, as compared to an increase of 21 times for the entire body, according to the Better Vision Institute of New York.

Self-disinfecting drinking glasses are under study at the California Institute of Technology—the rims are coated with plastic-silver mixture said to kill practically all liquid-borne bacteria.

Thin, streaky, high clouds known as *cirrus,* and often popularly called "mares' tails", are formed of tiny ice particles.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article*

ASTRONOMY

What does the newly discovered ringed star look like? p. 139.

What trio of planets may be seen in a group in the west? p. 138.

Where can you find the new Whipple Comet? p. 132.

CHEMISTRY

What hope have chemists of producing entirely new compounds? p. 140.

ENGINEERING

What device will enable you to burn heavily coking soft coals? p. 136.

FISHERIES

Why do oysters grow fat when it rains? p. 141.

INVENTION

How are brains being used to break bottlenecks? p. 131.

MEDICINE

How has the Army planned to avoid yellow fever? p. 135.

How should the home sickroom be arranged? p. 136.

What chemical relieves "ringing in the ears"? p. 136.

What drug appears to be effective against tuberculosis? p. 131.

METALLURGY

How can old tin cans be exchanged for precious copper? p. 134.

POPULATION

What handbook will help you if you are searching for birth records? p. 135.

PSYCHIATRY

How can children's fears be relieved by treating the parents? p. 134.

Why does democracy depend upon friendliness of neighbors? p. 133.

PUBLIC HEALTH

How is Hollywood aiding the fight against syphilis? p. 132.

What branch of the Army is the safest in peace time? p. 140.

What children's disease would be a military problem if epidemic? p. 137.

WILDLIFE

Does it pay to turn fields into ponds? p. 137.

SCIENCE NEWS LETTER

Vol. 41 FEBRUARY 28, 1942 *No. 9*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

Copyright, 1942, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Cable address: Scienserve, Washington.

New York office: 310 Fifth Avenue, CHickering 4-4565.

Entered as second class matter at the postoffice at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The Science Observer, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N. Y. C., PEnnsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Henry B. Ward, University of Illinois; Edwin G. Conklin, American Philosophical Society; J. McKeen Cattell, Editor, Science. *Nominated by the National Academy of Sciences.* R. A. Millikan, California Institute of Technology; Harlow Shapley, Harvard College Observatory; William H. Howell, Johns Hopkins University. *Nominated by the National Research Council:* Ross G. Harrison, Yale University; C. G. Abbot, Secretary, Smithsonian Institution; Harrison E. Howe, Editor, Industrial and Engineering Chemistry. *Nominated by the Journalistic Profession:* O. W. Riegel, Washington and Lee School of Journalism; A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers. *Nominated by the E. W. Scripps Estate:* Frank R. Ford, Evansville Press; Warren S. Thompson, Miami University, Oxford, Ohio; Harry L. Smithton, Cincinnati, Ohio.

Officers—Honorary President: William E. Ritter. *President:* Edwin G. Conklin. *Vice-President and Chairman of Executive Committee:* Harlow Shapley. *Treasurer:* O. W. Riegel. *Secretary:* Watson Davis.

Staff—Director: Watson Davis. *Writers:* Frank Thone, Jane Stafford, Marjorie Van de Water, Morton Mott-Smith, Edwin Neff. *Science Clubs of America:* Joseph H. Kraus, Margaret E. Patterson. *Photography:* Fremont Davis. *Librarian:* Minna Gill. *Business Manager:* Alvin C. Stewart. *Sales and Advertising:* Hallie Jenkins, Austin Winant. Correspondents in principal cities and centers of research.

MEDICINE

Sulfone Drug Effective Weapon Against Tuberculosis

Exhaustive Studies in Test Tube and on Guinea Pigs Shows Di-Amino-Di-Phenyl-Sulfone "Retards" Germ

NEW hope that tuberculosis, like pneumonia, may be successfully treated with a chemical relative of sulfanilamide is raised by a report published by U. S. Public Health Service research scientists.

Following exhaustive study both in the test tube and in guinea pigs, a drug so far known only by its chemical name di-amino-di-phenyl-sulfone, "appears to have a definitely retarding influence" against the tuberculosis germ. Further, the dosage necessary to slow up the indomitable bacillus seemed within the margin of safety—it did not kill the animals.

With this drug as a starting point, Dr. M. I. Smith, Public Health Service pharmacologist, who first used it against the human type of tuberculosis, aims to develop derivatives more hostile to tuberculosis and safer to use in human patients. So far the drug has been tested only with animals.

A derivative of di-amino-di-phenyl-sulfone, named promin, is being tried in human tuberculosis cases by scientists of the Mayo Clinic, but results have not yet been reported.

Dr. Smith and his associates, Dr. E. W. Emmart and Dr. B. B. Westfall, included promin in their test tube and guinea pig experiments, but found it inferior to the parent drug.

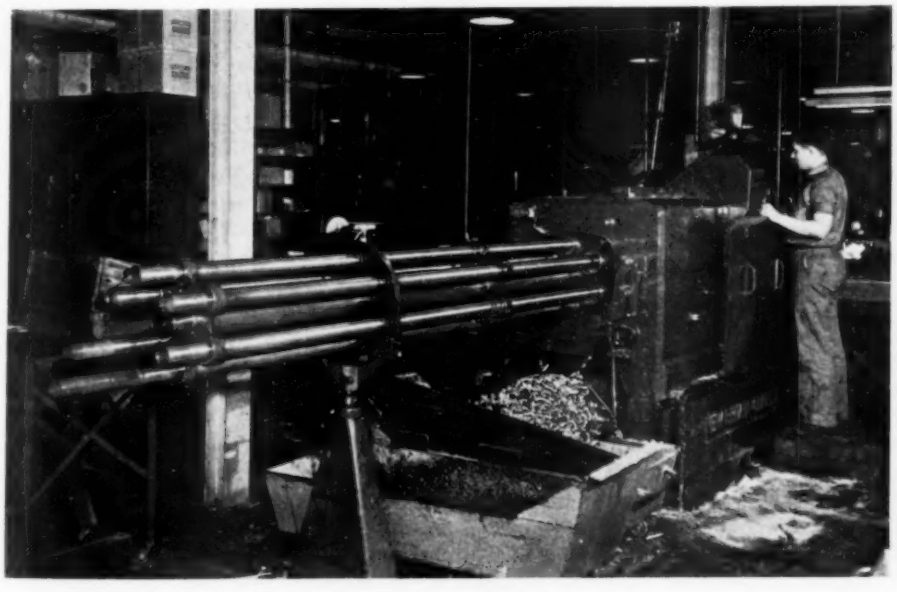
One of the derivatives for which the Public Health Service scientists are searching may, it is hoped, become the specific drug for tuberculosis. So far, the tough, waxy coated tuberculosis germ has defeated every attempt to kill it in the human host. There is no specific treatment for tuberculosis, despite recent medical progress which has reduced the number of cases and the death rate.

Dr. Smith and his associates tested di-amino-di-phenyl-sulfone together with 22 other drugs in laboratory cultures of the human strain of tuberculosis bacillus. The di-amino-di-phenyl-sulfone inhibited growth with the least amount of drug. In tuberculous guinea pigs only 56% died when assisted with the drug, as compared to 81% that received no drug. Further, the extent of the disease in the animals treated with this drug was only 0.9% as compared with 2.3% when no drug was given. In this series, 97 animals were tested over a period of 107 days.

In their final estimate following these experiments, the Public Health Service researchers conclude:

"All the experiments taken together strongly indicate di-amino-di-phenyl-sulfone the most effective agent, (both in the test tube and in the animals)."

Science News Letter, February 28, 1942



NOW MAKES SHELL BOOSTERS

This lathe in a midwestern company plant, which formerly made spur gears, worm wheels and commentator rings, has been converted to war use by being tooled with an eccentric spindle and thread rolling attachment for the production of 20-millimeter shell boosters. This is an official photograph from the Office of Emergency Management.

INVENTION

Bottlenecks Broken By Use of Inventive Brains

See Front Cover

FAMOUS Yankee ingenuity is speeding up the conversion of industrial plants for war work by improvising tools from available materials and by adapting old tools to new uses. How brains were thus used to break bottlenecks is told by a War Production Board report.

One Midwestern plant stopped making electric fans and motors and prepared to make gun turrets and shell boosters. Officials did not sit down and wait for months or years to secure tools from a machine tool market already glutted with orders from war industries.

They set their wits to work on what they already had and sent inquiries to a number of smaller manufacturers throughout the region asking them to outline their facilities.

Holes had to be burred inside the shell boosters. It would have taken two months to wait for delivery of a machine designed for this purpose. But in just 30 hours a homemade machine was rigged up to do the work. It makes use of a dentist's burr just like the one you have probably had painful acquaintance with in your own dentist's office. And it works.

In 60 hours, the plant's men had built a machine that would ream two holes simultaneously in the shell boosters.

With a fan base already on hand and a couple of pieces of machine tool, the plant superintendent devised another machine that would check closely the accuracy of the threads on the shell

boosters. He worked out the problem in a matter of hours and it replaces a slow hand method.

Engineers converted an old standard arbor press into an air-operated machine to stake screws in the shell boosters. It is shown on the front cover of this week's SCIENCE NEWS LETTER. It requires so much less strength to operate than does a manual press that a girl who has been making loose-leaf notebook binders now has also been "converted" to run the new machine.

Science News Letter, February 28, 1942

PUBLIC HEALTH

Hollywood-Produced Movie Aids in Fight on Syphilis

A HOLLYWOOD-produced motion picture that pulls no punches but shows men exactly how to "play safe" and what to use to escape syphilis is the latest shot fired by the U. S. Public Health Service in its all-out war on syphilis.

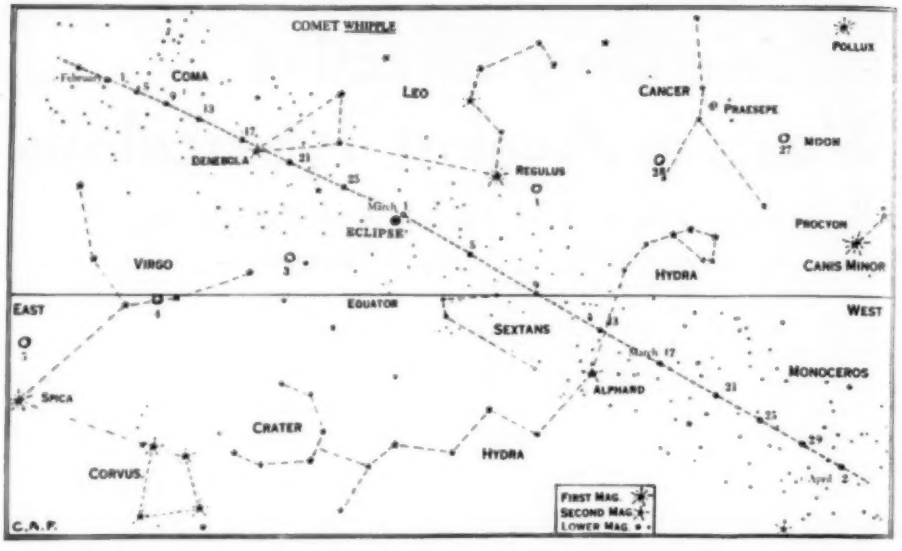
The film, *Know For Sure,* directed by Lewis Milestone under the supervision of Darryl Zanuck, was produced by the Research Council of the Academy of Motion Picture Arts and Sciences for the federal health service. It will be shown only to men's groups in clubs, factories, colleges and possibly Army training camps.

It tells about Tony whose first son was born dead, about Jerry and his college friends out to celebrate a football triumph, about the man who thought, mistakenly, he could get rid of syphilis by rubbing some salve on a sore, instead of going to a reputable physician for the sure, if slow, treatment that really cures syphilis when started in time.

Details of that treatment and of methods for diagnosing syphilis in all its many masquerades as heart trouble, nervous and mental disease, skin rashes, eye trouble and shortness of breath, make up a longer film, produced by the U. S. Public Health Service itself in color and sound, for doctors and medical students.

This film is designed especially for the general practitioner who has never "bothered with syphilis" before but who, because of our war-caused shortage of physicians, will be drawn into the fight against this disease. The 45-minute film, which can be divided into three parts, condenses the experiences of six months in a syphilis clinic.

Science News Letter, February 28, 1942



ASTRONOMY

Whipple's Comet Brightest At Middle of March

Unless It Becomes Unexpectedly Brighter, However, It Will Still Be Invisible Without Optical Aid

WHIPPLE'S comet will reach its maximum speed and maximum brightness March 10 to 18. Unless it becomes unexpectedly brighter, it will still be invisible without optical aid, for the predicted magnitude is 7.2, well below the minimum of 6 for unaided vision.

The comet will then be near Alphard, the orange star in the heart of Hydra. From then on, it will slacken its pace and grow dimmer, as it recedes from our neighborhood, probably forever.

The original announcement of comet 1942a, as it is called, was made by Dr. Fred L. Whipple of Harvard Observatory on Feb. 3, but the war delayed news of this discovery reaching Europe.

The comet was independently discovered, Feb. 11, by the Italian astronomer, A. Fresa of Pino Torinese, Italy. The Italian report was sent to Copenhagen, whence it was sent to Prof. Knut Lundmark of Lund, Sweden, who radioed it to Harvard College Observatory

Whipple's comet and the moon will cross paths just about the same time the moon enters the earth's shadow for the total lunar eclipse of March 2. The monthly full moon occurs at this time, so for a few days before and after that date the comet will be difficult to find because of moonlight scattered all over the sky. However, during the eclipse, the comet should be visible, with powerful binoculars or small telescopes, about 2½ degrees west of the moon.

The chart on this page, drawn by C. A. Federer, Jr., of Harvard College Observatory, shows the path of the comet as predicted by an ephemeris computed by R. N. Thomas, also of Harvard Observatory. Note that the comet appears to move faster during the first part of March, and then begins to slow up once more. Identification of the comet can be made by its motion in an hour or less —this is important because it passes through a part of the sky rich in exterior galaxies, which appear as faint nebulae—diffuse in outline, just as is the comet.

Only near the comet's path are faint stars shown, in order to avoid confusion. However, at its brightest, comet Whipple will still be fainter than any star shown on this chart, but its position can be ascertained by reference to them. The chart shows dashed lines joining the principal stars in the most important constellations; also, the names of the principal

stars in the field. On March 15, the comet will be near Alphard, the orange star in the heart of Hydra.

The positions of the moon from February 27 to March 5, at 8:00 p.m., Eastern War Time, are shown, that on March 2 being shown as a dark disk, representing the eclipse. The comet positions are shown for 8:00 p.m., Eastern War Time, also. The corresponding magnitudes, based on the "fourth power" law, are predicted as follows: March 2, 7.5; March 10, 7.2; March 18, 7.2; March 26, 7.4. It is not possible to predict sudden changes in the brightness and appearance of a comet. These may or may not occur, and the brightness may increase more rapidly and to a greater maximum than listed above. Binoculars of good light-gathering power are needed to pick up its faint light.

The following positions of the comet at 8 p.m. EWT, as computed by Mr. Thomas, will help amateur astronomers locate it: March 1, right ascension, 10 hr. 43 min., declination plus 8 degrees 7 minutes. March 13, right ascension, 9 hr. 21 min., declination minus 3 degrees 19 minutes.

Science News Letter, February 28, 1942

The forked tongue of reptiles is probably one of the most wonderful tactile organs in existence, as it feels many vibrations in the atmosphere which are non-existent to the sense of touch of humans.

PSYCHIATRY

Democracy Threatened By Lack of Neighborliness

Feeling of People Divorced From Social Life That They "Don't Count" Seen as Undermining Morale

LACK of neighborliness in cities, the custom of city people living anonymous lives of their own divorced from the general social life, the feeling of millions of people that "there is no place for them—that they do not 'count,'" threaten the foundations of democracy, Dr. Saul D. Alinsky, of Chicago, told members of the American Orthopsychiatric Association meeting in Detroit.

Dr. Alinsky is the sociologist who helped transform Chicago's notorious "Back-of-the-Yards" district into a genuinely democratic community.

Morale, in his opinion, can only come when the battered word "democracy" begins to mean something to the mass of our people. Not a word that means special privilege to a few, not just a system of voting, not an eagle or a man in a star-spangled top hat. Morale will only come when the rank and file of people can get together and work together, as they used to in small towns.

That this can be done even in huge industrial cities was demonstrated first by the almost miraculous success of the Back-of-the-Yards Neighborhood Council in Chicago, and more recently by Armourdale Community Council in Kansas City, and the South St. Paul Community Council.

Chicago's Back-of-the-Yards, branded the "Jungle" in Upton Sinclair's famous novel, began its transformation less than two years ago when Dr. Alinsky secured the endorsement of Bishop Bernard J. Sheil and the CIO to set up a Neighborhood Council. The results have amazed sociologists, criminologists, church and welfare workers, and should provide a silencing answer to those who say "democracy won't work."

CIO leaders joined hands with the Chamber of Commerce and the AFL, Catholics, Protestants and Jews worked together under the leadership of Bishop Sheil and Dr. Alinsky to transform Chicago's crime-infested stockyard district into a working community of all the people.

Business men, as well as Church and labor leaders, saw that unemployment, poor housing, inadequate relief with its alarming rate of infant mortality, were their own problems. They cooperated with the Neighborhood Council in providing free meals to undernourished children, building a recreation center five blocks square, setting up the Infant-Welfare Station which promptly cut the infant death rate from ten in every 100 to four out of 605.

Following the astonishing success of the Chicago program, a national Foundation, "Industrial Areas, Inc." was set up to apply the same principles to Kansas City and St. Paul.

Science News Letter, February 28, 1942

Stutterers' Parents Nervous

STUDY of 15 child stutterers showed a neurotic family background in the majority of the cases, Dr. J. Louise Despert, of the New York Hospital and Cornell University Medical College, reported.

Nervous mothers who are always worrying about whether the baby or small child eats enough are likely to have nervous children who stutter. These stuttering children frequently have other neurotic traits.

"This is of considerable importance," Dr. Despert stated, "if one considers that the White House Conference of 1930 gave 1,300,000 as the number of stutterers in the United States and also that the majority of these cases are being treated by means of speech techniques which involve only the speaking organs and functions."

The stuttering results, Dr. Despert believes, from neurotic attention being focused on the mouth, usually with regard to the feeding situation.

She pointed out that children are learning to talk at about the same time they are learning to eat solid food and to feed themselves. They use the same structures to take in food and to form and pour out words. If mother frightens them while they are trying to take in food, they are likely to be frightened also when trying to form and pour out words, and in consequence stutter and have difficulty in talking. The children themselves sometimes give the clue to this when they tell of their difficulty in bringing out words.

Striking example of how the mother's attitude about food affected the child's speech was the case of the fussy, nervous mother who "tried various devices to startle the child and 'throw food' in his mouth unexpectedly because she feared he would die if he didn't eat."

At the age of eight and one-half years, this boy is still taking six meals a day, five of which are liquid, as well as stuttering when he tries to talk.

Treatment of these children consisted of general psychiatric treatment, with chewing-speaking games for the younger children or chewing-speaking exercises for the older children, in a few cases.

In six cases there was some speech improvement and also general improvement. In four cases there was an im-

provement in either the behavior or the neurotic traits but no improvement in the speech. The cases in which greatest improvement took place were those in which both general psychiatric and specific speech treatment were systematically carried out.

Science News Letter, February 28, 1942

Noise to Please Oneself

"ONE makes noise to please oneself and language to please mothers and, later, neighbors."

This sums up the child's own feeling about a conflict which makes some children stutter, in the opinion of Dr. John A. Rose, of the Winston-Salem, N. C., Child Guidance Clinic and the Bowman Gray Medical School.

Primary function of speech is self-expression. Imposed on this is the function of communication. When families and their social group place much emphasis on this second function of speech, perhaps hero-worshiping political and religious orators, the child may either struggle against this attitude and become a stutterer or he may take on the family attitude and become a "verbalist."

Fundamentally, stuttering and other speech disorders like feeding and school problems, arise from a "troubled child-parent relationship."

The child guidance clinic, working as it does with both child and parents, therefore has a chance, Dr. Rose believes, even with its limited time, to help with the speech difficulty.

Science News Letter, February 28, 1942

Children's Fears Traced

EXTREME fears in children, shown by sleepwalking, night terrors, nightmares, inability to sleep and phobias about spiders, cats and death of one or both parents, can be traced to neurosis and instability in the parents and disturbance in their relationship, Dr. Jacob Kasanin, Dr. Joseph Solomon and Miss Pearl Axelrod, of Mount Zion Hospital, San Francisco, found in a study of anxiety states in 20 children.

The anxiety state may develop as early as the age of two years. The children in the San Francisco study were between the ages of four and 12 years. None of the mothers could be considered stable, mature women, and many of the fathers were also neurotic.

Both parents and children were treated and when the parents were able to overcome their anxiety and take a more grown-up attitude toward their problems, the children invariably improved.

When parents were consistent in showing they did not want children, the latter were less likely to become extremely fearful than when the parents were neurotic and varied between over-devotion and extreme hostility.

More boys than girls were brought to the child guidance clinic for treatment, perhaps because fears in girls are not considered unnatural, whereas when boys are fearful the parents are more likely to be concerned and to seek help for the child. Results of treatment were worse with the girls than with the boys, however, probably because none of the girls had a stable father and their mothers were more neurotic than the boys' mothers.

Science News Letter, February 28, 1942

METALLURGY

Old Tin Cans Chemically Exchanged Equally For Copper

Iron Is Thrown Into Mine Waters Containing Copper Sulphate; Iron Salt Formed, Copper Precipitated

GETTING copper from old tin cans sounds like a miracle but it is just good chemistry. Old tin cans may be chemically exchanged for an equal amount of copper by cutting them up into small pieces and throwing them into mine waters containing copper sulfate. Iron sulfate is formed and flows away while the precious copper is saved.

Three plants in the Southwest are planned by the Defense Plants Corporation for cleaning and shredding the cans and sending them to the copper mines. Towns in the locality have been urged to start collecting cans. About 2,000 tons of copper per month are expected to be recovered by this extension of an old practice. Normal consumption in the United States is about 60,000 tons per month.

The process by which cans are chemically exchanged for copper is simple. The iron and tin simply replace the copper in the sulfate and are carried away by the mine waters. The copper, being squeezed out of the sulfate, is precipitated in metallic form on the can. As the latter slowly dissolves away and is replaced by copper, it gives the impression that the tin can has been miraculously converted into a copper one. That would be a miracle indeed without an atom smasher. But the mine water loses its bluish color by the extraction of the copper and becomes yellowish from the addition of iron and tin, indicating that there has been a chemical exchange, not a transmutation.

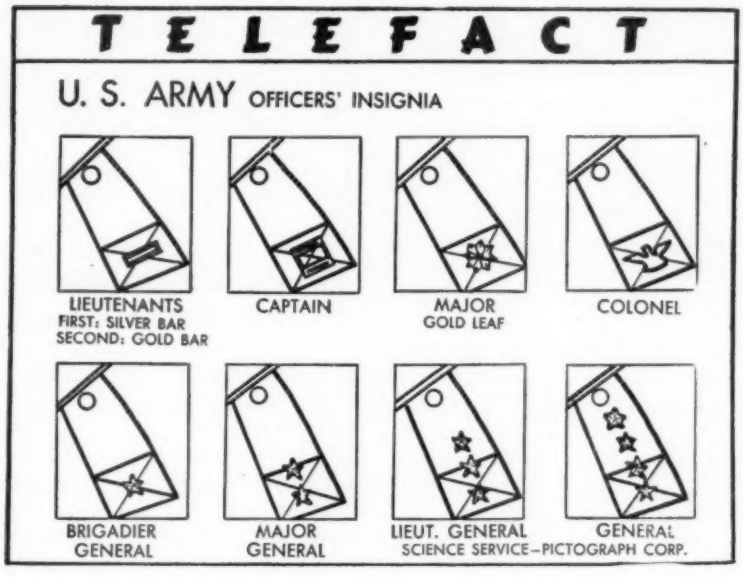
The process is not new, but formerly scrap iron and even new iron was used. It was discovered accidentally years ago, so the story goes, when Jim Lefad of Montana threw some tin cans into a stream of mine water that flowed through his back yard. Next morning he found in place of them a sludge of copper which turned out to be 98% pure. He contracted for all the mine water for a year and cleaned up $90,000 that year.

The tin and iron are of course not recovered in this way, but the cans would be thrown away anyway, unless detinning is successfully established all over the country. Even so, the remainder of the can after detinning could be used in the copper recovery process. And this might be the best use of it, for this iron is not even regarded as good scrap because of the tin remaining in it. The detinning processes so far used remove only about half of the tin in the can, the other half remaining in the iron and unfitting it for many purposes. But it would be no obstacle in the recovery of copper from its sulfate solutions.

The War Production Board's Bureau of Industrial Conservation has proposed collection of cans in the areas around Pittsburgh and Sewaren, New Jersey, where there are detinning plants. If experiments in these areas are successful, collections will be extended to other cities where there are detinning plants.

Housewives will be asked to clean the cans after food has been removed, to cut off the bottoms as well as the tops, and to flatten the remaining portion of the can.

Science News Letter, February 28, 1942



MEDICINE

Yellow Fever Vaccination Of Army Extends Procedure

Was Started in February Last Year Among Troops Stationed in Caribbean Area; Now Given Whole Army

ANTI-yellow fever vaccination of the entire American Army, announced by Secretary of War Henry L. Stimson, is an extension of vaccination started a year ago and follows established Army medical custom of beginning such a procedure in only part of the troops, according to information from the office of the Surgeon General.

When vaccinations against typhoid fever were first started in the Army, only 20% of the troops were vaccinated during the first year. The following year 30% were vaccinated, but not until the third year was vaccination extended to the entire Army. The same custom was followed in toxoid inoculations to protect the men against tetanus (lockjaw) infection in wounds.

Vaccinations against yellow fever were started in the middle of February, 1941, among troops stationed in the Caribbean area who might be exposed to the disease, and among the G.H.Q. air force. Vaccination of the entire Army against yellow fever was contemplated at that time, but because the United States was not then at war, it was not considered necessary to do the much bigger job of vaccinating all men and officers.

The outbreak of war, which meant that troops might have to be sent anywhere on short notice, without time for vaccinations if they were destined to go to yellow fever regions, led to the decision to vaccinate the entire Army as part of the general plan to protect it as far as possible against any disease that might be encountered anywhere.

In accordance with this plan, vaccinations against plague, cholera and typhus fever, although not as certainly protective as the yellow fever vaccinations, have already been ordered for any troops likely to be sent to regions where those diseases are prevalent.

The yellow fever vaccination order is a further indication of the highly efficient planning and preparation of the medical branch of the Army which was responsible for remarkable life-saving achievements in the Pearl Harbor attack. It marks another first for the American Army which is not only the first to be completely vaccinated against yellow fever but was the first Army in the world in which vaccination against typhoid fever was compulsory.

Yellow fever at present exists in South America and Africa, but because of extensive plane travel these days, there is danger of its spreading swiftly to India and the South Sea Islands. To fight this danger, quarantine supervision of plane travellers and disinfection of planes from yellow fever areas, to destroy any yellow-fever-carrying mosquitoes that might have stowed away on the planes, is practiced. Under war conditions, however, such measures might break down, allowing the spread of yellow fever to regions now free of it.

The Army is not taking any chances on having the men caught unprotected against it anywhere.

Science News Letter, February 28, 1942

POPULATION

WPA Guidebooks Help Search for Birth Records

IF YOU need a copy of your birth certificate for military service or a job in a war industry, you may find help in the Guide to Public Vital Statistics for your state, published by the Works Projects Administration.

These guides have been published for 21 states and the remaining state guides are scheduled for completion by April 1.

The Guides to Vital Statistics show where the birth records are listed in each county, city or town of a particular state, and the fee charged for the service.

When official public records of a birth are missing, church records which give dates of births and baptisms may be required. WPA is also publishing Guides to Church Vital Statistics to supplement the Guides to Public Vital Statistics. They list pertinent records of churches, giving names of churches, mailing addresses, dates of records and types of records kept. Church guides for the States of Washington, New Jersey and Wisconsin are published and work is now being rushed for a majority of the other states.

Copies of the guides containing birth certificate information published by the WPA are being distributed to State Departments of Health, Vital Statistics Bureaus, the Bureau of Census and to the libraries of the War and Navy Departments. They can be had by industries, recruiting officers, Selective Service boards and other official agencies by writing the WPA administrator of a particular State, or to the Washington Headquarters of the Historical Records Survey of the WPA.

Science News Letter, February 28, 1942

MEDICINE

Synthetic Chemical Helps "Ringing in the Ears"

MARKED relief from the familiar condition, "ringing in the ears" was obtained in a series of cases treated with the synthetic chemical, Prostigmin, Capt. A. F. Judge, Medical Reserve, U. S. Army, reports. (*Military Surgeon*)

Capt. Judge also treated cases of deafness, but obtained only a few improvements. He notes, however, that in view of the scarcity of drugs which relieve deafness to any extent, that use of Prostigmin should not be abandoned.

Cause of the "ringing" or other noises in the ear is not always known. Sometimes it is a plug of wax. An overdose of quinine will do it. Sharp explosions such as gunfire and bombs will sometimes cause it. Neither is the action of Prostigmin clear, and there is much controversy over its value in relieving "ear noises."

Capt. Judge, however, treated fourteen cases of ringing-in-the-ears with Prostigmin and gave complete relief to five, marked improvement to four, and some benefit to three. Two patients were in no wise helped.

Science News Letter, February 28, 1942

PUBLIC HEALTH

Red Cross Ready to Supply Blood Plasma to Civilians

THE AMERICAN Red Cross is prepared to provide a limited supply of life-saving dried blood plasma to civilians, should the enemy strike at American communities, Chairman Norman H. Davis has announced.

His announcement followed consultation with leaders of the Office of Civilian Defense and the Surgeons General of the Army and Navy. The Red Cross has been filling military and naval needs for the past year.

The blood supply service to civilians is made possible by the more than 55,000 persons who have donated blood since the Pearl Harbor attack. Hundreds of thousands of additional donors are needed, however, the Red Cross stressed.

Under the new civilian distribution plan, the plasma will be distributed by the Red Cross to points where the enemy may strike. The plasma will be handled by the disaster relief organization of the Red Cross, and will be issued immediately through medical channels to be jointly determined by the Office of Civilian Defense, Mr. Davis said.

"Formal understandings exist with the military departments by which the American Red Cross is authorized to call upon the equipment and the supplies of the armed forces in times of catastrophe," he explained. "Through these provisions, the supplies of dried blood plasma held by the armed forces can be drawn upon by the Red Cross in case of civilian casualties caused by enemy action."

The Red Cross reports that more than 85,000 donors have contributed blood since the program was begun a year ago. The blood is being supplied at 17 Red Cross Blood Donor stations in cities near the laboratories processing the blood for Army, Navy and civilian defense.

Science News Letter, February 28, 1942

ENGINEERING

Stoker Enables You To Burn Heavily Coking Soft Coals

HEAVILY coking bituminous coals can be satisfactorily burned in household furnaces by use of improved underfed stokers developed as the result of a research by Dr. C. C. Wright and T. S. Spicer of the Pennsylvania State College. The research was reported by Dr. A. W. Gauger of Penn State at the meeting of the American Institute of Mining and Metallurgical Engineers in New York.

Bituminous coal, when heated, becomes plastic, gives off volatile gases and solidifies into coke—forming "coke trees" which seriously interfere with combustion in the usual household stoker and may even put the fire out.

Coking can be prevented, the scientists found, by partially oxidizing the coal before it is burned. This they accomplished in the ordinary household stoker by introducing air below the point of burning and also providing means of agitation to cause the air to contact most of the coal. At the temperature there prevailing, 300 degrees Fahrenheit or more, oxidation was rapid and coking during burning was entirely eliminated.

Five typical stokers, improved in this way, tested with nineteen strongly coking bituminous coals, showed increased efficiency in all three kinds of operation —continuous, intermittent, and "hold-fire."

An improved stoker was also tested in the home, operating continuously for three months under wide variations of heat demand with entire satisfaction.

Science News Letter, February 28, 1942

IN SCIENCE

MEDICINE

Keep Sickroom Away From Home Kitchen

IF SOMEONE in your family gets sick and has to stay in bed, you will have to choose and arrange the sickroom in a way to promote the health and safety of both the patient and other members of the family. The patient's own bedroom may not be suitable for use as a sickroom and in that case he should be moved to another room.

The sickroom should be near the bathroom but not near the kitchen, so that there will be no temptation to empty basins from the sickroom in the kitchen sink, instead of into the bathroom basin or toilet bowl, where they should be emptied. All articles used in the sickroom should, as far as possible, be kept out of the kitchen, so as to avoid the danger of getting germs from the patient mixed with food for the family.

The noise and cooking odors from the kitchen are likely to be very disturbing to the patient, which is another reason for having his sickroom far from the kitchen. It should be located to insure privacy, particularly while he is being bathed or given any kind of treatment or nursing care.

Many homes today have built-in beds, especially in children's rooms. These are attractive and save space, but they are not suitable for sickness. The patient's bed should be placed so that it can be reached by the nurse from both sides, and it should not be so large that the patient cannot be reached from either side.

Keep medicines out of the patient's reach and be sure there is nothing dangerous in the sickroom, such as low, unguarded window sills, unsteady chairs, loose rugs on smooth floors, loose wires and unsafe electrical equipment. Sick people are not themselves mentally or physically, and cannot be trusted to take care of themselves as they can when well, warn Elinor E. Norlin and Bessie Donaldson, teachers of nursing in New York high schools, in their newly published book, *Everyday Nursing for the Everyday Home* (*Reviewed, SNL, this issue*).

Science News Letter, February 28, 1942

NE FIELDS

PSYCHOLOGY

Nazis Have No Inside Track on Psychology

TO COUNTERACT the widespread myth that Goebbels and a select group of German super-psychologists have devised unique strategems for battering whole populations into helpless submission, the Association for the Advancement of Psychoanalysis points out that German psychologists know nothing that is not commonplace to American scientists.

"The German propaganda group has merely tried to disseminate the same aroma of invincibility about their psychologists as they have about their military forces. It is as important to debunk the mythical irresistibility of German psychologists as it is to recognize the actual vulnerability of the Nazi armies."

Science News Letter, February 28, 1942

WILDLIFE

Fields Turned Fish-Ponds Give High Food Yields

BIG CROPS of fish can be raised on old cotton fields in the South—fields too worked-out to produce paying land crops any longer. The system has been developed by two research men at the Alabama Agricultural Experiment Station, Auburn, Ala., Dr. H. S. Swingle and Dr. E. V. Smith.

All that is necessary is a field and a creek, so situated that a low earth dam will turn the field into a shallow pond. The water, instead of the soil, then receives a fertilizer application and is stocked with fish. Bass, catfish and bream are regarded as most promising.

High food yields at low cost have been obtained in the experiments. As much as 600 pounds of fish per acre, at production costs between three and six cents a pound, have been taken out of the ponded fields. Comparable fields used as pastures yielded only 149 pounds of beef per acre, at much higher per-pound cost.

The fertilizers used are the regular commercial kinds, applied at a rate of 100 pounds to an acre. Results were improved by adding ten pounds of nitrate to the regular fertilizer mixture. Too much fertilizer resulted in the growth and decay of such an excess of aquatic plant and animal life that the water was robbed of its oxygen and the fish smothered. Moderate fertilizer applications therefore are emphasized as essential to the success of the method.

Fish are not directly nourished by the fertilizer. First result is the encouragement of a good growth of microscopic water plants. These become the food of microscopic animals, and these in turn are eaten by others. The fish are next to the last and largest link in the biological chain of eat-and-be-eaten.

The last and largest link of course is the field owner and his family, who get sport, increase and new variety in daily menu, and cash from sale of surplus fish.

Science News Letter, February 28, 1942

ANTHROPOLOGY

Ancient China Did Not Invent Its Civilization

ANCIENT China did not invent its own civilization, but borrowed the basic ideas from the Near East, just as Europe did, is the verdict of Dr. Carl W. Bishop of the Freer Gallery of Art in Washington, D. C.

His conclusion, presented with evidence in the annual report of the Smithsonian Institution, makes the Near East with its Fertile Crescent of the Tigris-Euphrates Valley more significant than ever as cradle land of Old World civilizations.

Citing Chinese borrowings, Dr. Bishop says that when Chinese began to raise wheat and ride in chariots in their bronze age, between 2000 and 1000 BC., the wheat was of precisely the same varieties that farmers grew far to the west. China's chariots were drawn by two horses yoked—not harnessed—abreast, just as in the Occident.

Near 1000 B.C., invaders from the West, the Chous, seized northern China and introduced the seven-day week and the use of eunuchs as palace guards. Dr. Bishop says that these are believed to be Near Eastern traits. Soon after, northern Chinese began to build grave mounds over the illustrious dead, which was an old custom widespread west of China.

While Dr. Bishop traces the makings of China's civilization to other lands, he emphasizes that the Chinese used their borrowings to develop one of the earth's great ancient patterns of living.

Science News Letter, February 28, 1942

PUBLIC HEALTH

Epidemic of Mumps May Be Military Problem

THIS is the season of the year when epidemics of mumps are most likely to occur. Although generally considered a somewhat comic childhood ailment, this painful and incapacitating disease may become epidemic in barracks and military camps as well as in schools and colleges. During the World War, one out of every 20 white men and one out of every six colored men in the United States Army suffered an attack.

The disease rarely kills anyone. Its chief importance, says the U. S. Public Health Service, is its tendency to occur in epidemics which may disable all at one time a large proportion of children in schools or new recruits.

The fact that the sex glands may be affected when the disease attacks older boys and girls is also a cause of some concern. The importance of this complication as a cause of sterility is still debatable, say Dr. Gaylord W. Anderson and Miss Margaret G. Arnstein in their recent book, *Communicable Disease Control*.

They point out that since no one becomes immune to mumps without having had the disease, some have suggested deliberately exposing a child to mumps before he reaches adolescence in order to avoid the disease later at a time when it might cause serious complications. This is a step which parents should not take without consulting the family doctor. While medical opinion may be divided on this, it is generally agreed that older boys and girls who get mumps should be given special care and should stay quietly in bed until they have completely recovered, in contrast to younger children who are usually allowed out of bed as soon as the fever and acute symptoms have subsided.

The disease is caused by a virus. Its medical name is parotitis, meaning inflammation of the parotid gland. This is the salivary gland which partially surrounds the ear at its attachment to the head. The painful, tender swelling of these glands, without any reddening of the covering skin, usually makes it easy to recognize the condition. Usually it is limited to one side of the face, but both sides may be involved.

The first symptoms generally appear in from 14 to 18 days after exposure, and the disease is "catching" as long as the glands remain swollen.

Science News Letter, February 28, 1942

ASTRONOMY

Planet Trio

Jupiter, Mars and Saturn Now Close Together in the Western Evening Skies, Giving Opportunity to Compare

By JAMES STOKLEY

THE MOTIONS of the planets have now brought Jupiter, Mars and Saturn close together, and as they shine in the western sky in the constellation of Taurus, the bull, one has a good opportunity to compare them.

Jupiter is the brightest of the trio, whose places are shown on the accompanying maps. (These depict the skies at 11:00 p.m., war time, on the first of the month; an hour earlier on the 15th and two hours earlier on the 31st.) It is just above Aldebaran, a star in Taurus which is quite bright though considerably fainter than the planet. Jupiter's magnitude is now minus 1.8 in the scale used by astronomers.

Of the three planets, Saturn is next in brilliance, with magnitude plus 0.4. Mars, between the other two, is still fainter, with plus 1.3, which is a value exceeded by nine stars now in the sky. Yet, as recently as last October, Mars surpassed even Jupiter in brilliance. Then, however, it was very close to the earth, only 38,100,000 miles distant. Now it has receded to 147,000,000 miles—and is still going to greater distances!

Shine By Reflection

Planets shine by reflected light of the sun, while stars are far-away suns, shining with their own glow. Of these now in the evening sky, the most brilliant is Sirius, in the southwest, sometimes called the dog-star, which is a little fainter than Jupiter. It marks the constellation of Canis Major, the great dog. Above it is the lesser dog, Canis Minor, with the star Procyon.

To the right of Sirius is Rigel, in Orion, the great warrior. Above this are the three stars in a row that mark Orion's belt, and still higher is Betelgeuse. Taurus, with ruddy Aldebaran, is farther to the right, almost directly west.

High in the western sky are the twins, Gemini, one of whose stars, Pollux, is, like the others mentioned by name, of the first magnitude. And to the right of Taurus, in the northwest, is Auriga, the charioteer, with brilliant Capella.

Three more first magnitude stars can be seen farther east. High in the southeast is Leo, the lion. A hook-shaped group marks the head of the lion, and this is called the "sickle." The bottom star of these is Regulus. Below Leo is Virgo, the virgin, and the lowest star, near the horizon, is Spica. It seems fainter than it should be, on account of the low position, causing greater absorption of its light in passing through our atmosphere. And to the left of Virgo is Bootes, the bear-driver, with Arcturus its brightest orb.

In the early morning sky this month the other two naked eye planets may be seen. Rising some two hours ahead of the sun, and of brightness considerably greater even than Jupiter, is Venus, which a few months ago was on the opposite side of the sun and visible in the evening. Much harder to find is Mercury. About March 7 it will be low in the southeast just before sunrise, for then it will be at its greatest distance to the west of the sun.

Two eclipses feature the celestial program for March, but one of them, an eclipse of the sun on March 16, will be completely ignored by astronomers. At its best, this will only be a partial, with less than two-thirds of the sun's diameter covered by the moon. Even this will only be seen at the South Pole, in Antarctica and in the southernmost parts of the Indian and the Pacific Oceans. Probably it will not amount to enough to take the minds of the crews of warships cruising in these troubled waters off their tasks.

But the other eclipse, which is total, and of the moon, is much more interesting, since it will be seen, to some extent at least, over all the United States and most of Canada. It is the first total eclipse of the moon that we have had for several years visible during convenient evening hours.

This comes on Monday, March 2, and here is the schedule of what will happen, with times given in eastern war time (take one hour earlier for CWT, two hours earlier for MWT), and three hours earlier for PWT):

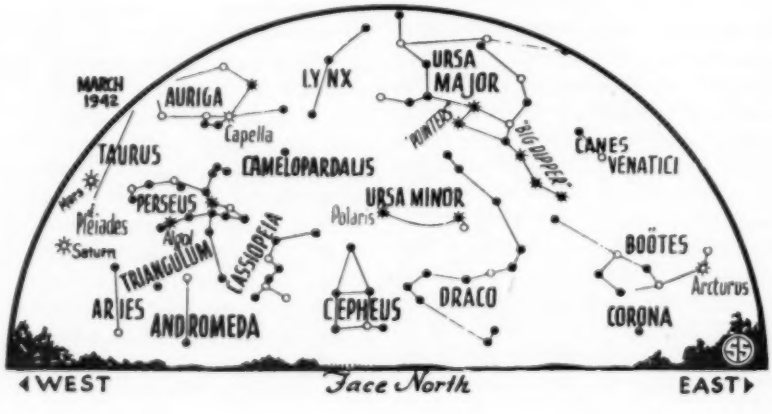
At 6:31 p.m. the moon starts to enter the shadow of the earth, the edge of which will gradually creep across the lunar face. Since the earth is a sphere, the edge of this shadow is curved.

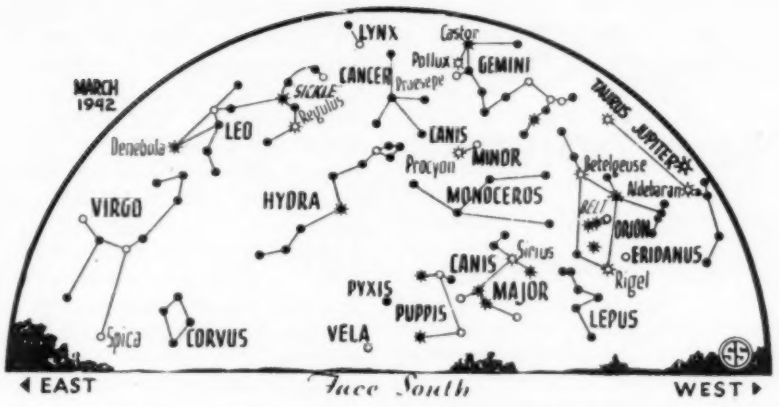
At 7:33 p.m., the moon has completely entered the shadow, and the total eclipse begins. The moon does not, however, completely disappear from view, but continues visible with a dull, coppery color. This is caused by light which the earth's atmosphere bends around into the shadow, reddening it as it goes through.

Middle of the eclipse, with the moon most fully immersed in the shadow, comes at 8:22 p.m.

At 9:10 p.m., the moon starts to emerge from the shadow, and the shadow's edge can again be seen creeping across the disk. This marks the end of the total phase.

By 10:12 p.m. the moon has completely withdrawn from the shadow, and the visible part of the eclipse is over. Until 11:15, however, it remains in the outer part of the earth's shadow, the penumbra. During this period a person on the moon would see the earth partly covering the sun. However enough light





reaches the lunar surface that its brightness is not greatly reduced.

In Washington, the moon rises on the second at 6:55 p.m., which is after the moon has started into the shadow, but before totality. In the Rocky Mountains, and along the Pacific Coast, the moon rises after the total phase is over, but the final partial stages will be visible. In San Francisco, for instance, moonrise is at 7:04 p.m., PWT, while the moon does not completely withdraw from the shadow until 7:12 p.m., PWT. In Alaska and northwestern Canada, moonrise comes after this, and there will be no view of the eclipse.

Celestial Time Table for March

Monday, March 2, 8:20 p.m., Full moon; total lunar eclipse. Thursday, March 5, 12:00 p.m., Algol at minimum. Saturday, March 7, 8:00 p.m., Mercury farthest west of sun. Sunday, March 8, 7:00 a.m., Moon nearest; distance, 229,700 miles; 8:49 p.m., Algol at minimum. Monday, March 9, 3:00 a.m., Venus at greatest brilliancy; 6:00 p.m., Moon in last quarter. Wednesday, March 11, 5:38 p.m., Algol at minimum. Friday, March 13, 11:22 a.m., Moon passes Venus. Saturday, March 14, 6:15 p.m., Moon passes Mercury. Monday, March 16, 7:50 p.m., New moon, partial eclipse of sun. Thursday, March 19, 2:00 p.m., Neptune nearest, distance 2,217,000,000 miles. Saturday, March 21, 2:11 a.m., sun crosses equator, spring commences; 11:28 a.m., Moon passes Saturn. Sunday, March 22, 4:26 p.m., Moon passes Mars; (Ab't 11 p.m.) Moon occults Aldebaran. Monday, March 23, 4:29 a.m., Moon passes Jupiter; 6:00 a.m., Moon farthest, distance 251,400 miles. Tuesday, March 24, 8:01 p.m., Moon in first quarter. Thursday, March 26, 1:45 a.m., Algol at minimum. Saturday, March 28, 10:34 p.m., Algol at minimum. Tuesday, March 31, 7:23 p.m., Algol at minimum.

Eastern War Time throughout. Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, February 28, 1942

ASTRONOMY

Strange Ringed Star Found Resembling Gigantic Saturn

Intensely Hot Star Is Surrounded by Luminous Ring Four Times the Diameter of Our Sun; One of Twins

DISCOVERY of an intensely hot star surrounded by a luminous ring of gas four times the diameter of our sun was announced by A. H. Joy of the Mount Wilson Observatory from results obtained with the 100-inch reflector.

Viewed from a distance of a billion miles, the star would resemble the planet Saturn as seen through a small telescope. The ring is revolving around the star at a speed of 800,000 miles per hour, completing a revolution every 14 hours.

The star is one member of the double star system RW Tauri. The other member is about twice as large with a surface temperature of 11,000 degrees Fahrenheit, or nearly the same as our sun. The large star revolves around its ringed companion once in 66 hours. Evidence for the existence of the ring was obtained from a study of the light variations of the system when the larger star eclipsed the smaller. The ring was found to be composed of glowing bases of hydrogen, magnesium, calcium, and iron.

"Observations are difficult on account of the faintness of the stars," Mr. Joy stated, "but it seems probable that by taking photographic exposures properly timed both the distribution of the chemical elements as well as the light intensity in the ring may be determined."

What was supposed to be an old "new" star or nova that had been abandoned for lack of interest by astronomers for nearly twenty years, has turned out to be actually a variable star of a type previously unknown. The discovery was also revealed by Mr. Joy in his report to the Astronomical Society of the Pacific.

Mr. Joy said that the star was put on the program of the 100-inch reflector because in the past it had shown sudden changes in brightness which indicated it might prove to be a recurring nova. But when the telescope was pointed at the object two so-called red dwarf stars were found there instead. Later Dr. A. van Maanen, also of the Mount Wilson Observatory, secured photographs which confirmed the identification. What was still more surprising was the detection of bright clouds of hydrogen and calcium gas in the atmospheres of stars of such low temperature.

"Further observations will be needed to determine whether the observed variations in light pertain to both stars of the pair," Mr. Joy stated. "These observations indicate that certain small low-temperature stars show changes in brightness not fully recognized before."

Science News Letter, February 28, 1942

Our prehistoric American forefathers used window seats and built-in *furniture* much as modern architects do.

One hundred pounds of *iron* will weigh 143 pounds when it has completely rusted, due to its having taken up oxygen from the air.

● RADIO

Saturday, March 7, 1:30 p.m., EWT

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Major Sam Seeley, of the Procurement and Assignment Service, will tell how the nation's supply of physicians, dentists, and veterinarians will be allocated.

Tuesday, March 3, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

CHEMISTRY

Sulfur Fumes Liquefied Give Chemists Useful New Solvent

Because it Works in Way Different From Water or Alcohol, it May Make Possible Entirely New Compounds

THE CHOKING fumes that pour out of factory chimneys or arise when sulfur is burned become, when liquefied, a water-like solvent that makes possible new compounds and a whole new field of chemical research.

The fumes are sulfur dioxide gas, SO_2, widely used in the preparation of sulfuric acid and other chemicals. But the liquid state and its possibilities have been largely overlooked, said Dr. J. Russell Bright of Wayne University in a recent address to the American Chemical Society.

There is plenty of sulfur in this country. There is enough in Texas mines alone to supply the whole world's present needs. Sulfur fumes escape from almost every chimney. In Detroit alone, Dr. Bright states, 120,000 tons of sulfur dioxide escape each year from the chimneys of coal-burning factories and buildings. Extended use of the substance would not make any fresh demands on critical war materials.

The gas is very easily liquefied. It is only necessary to cool it to 14 degrees Fahrenheit, which could be done in an ice cream freezer, or, without reducing its temperature, to compress it to one-third or one-half its volume. For this reason it was the refrigerant used in the early household refrigerators, and this was its first extensive commercial use.

Liquid carbon dioxide is an even better solvent for organic substances than water or liquid ammonia. It is not so good for inorganic substances and dissolves few metals.

Chemists need solvents in which to carry out chemical reactions. Dry chemicals do not in general react on one another. They must be dissolved in a liquid that will divide and disperse their molecules and give them mobility so that they may choose new partners and form new compounds. Water, ammonia, alcohol, ether, benzine and many less well known liquids serve this purpose.

Chemists need many solvents for many different purposes. What the solvent does not dissolve is just as important as what it does dissolve. The universal solvent sought by alchemists, the solvent that was to dissolve everything, would have been utterly useless if found, with nothing to keep it in. If you wish to remove a grease spot from your clothing, you want a solvent that will dissolve grease. If it dissolved the cloth as well, it would be effective but utterly useless as a spot remover.

The discovery of a new solvent having a new set of properties thus opens a new field of chemical possibilities. New reactions and new compounds become possible. There are certain compounds of sulfur and cyanogen that can be produced in no other way, Dr. Bright points out, than by the use of sulfur dioxide as the solvent. Some of these compounds may become useful in the preparation of insecticides and other poisons.

Science News Letter, February 28, 1942

Don't Delay

getting that new book you want to read. SCIENCE NEWS LETTER will gladly obtain for you any American book or magazine in print. Send check or money order covering regular retail price ($5 if price is unknown, change to be returned) and we will pay postage in the United States. When publications are free, send 10c for handling. Address:

Book Department
SCIENCE NEWS LETTER
1719 N St., N. W. Washington, D. C.

PUBLIC HEALTH

Air Corps Is "Safest," At Least In Peacetime

IN PEACETIME at least, the air corps appears one of the safest places in the Army—even the Quartermaster Corps is more dangerous, according to the annual report of the U. S. Army Surgeon General for the fiscal year July 1, 1940, to June 30, 1941.

A table listing the incidence of broken bones, for example, shows the greatest number in the Cavalry, with the Artillery, Quartermaster Corps, Engineer Corps, Infantry and Air Corps following in that order.

For all of Uncle Sam's soldiers during the fiscal year, the doctor's bill was $73,138,251.85, a medical bill which held the Army death rate to only 2.8 per 1,000 strength, the lowest in history, excluding battle casualties.

Soldiers treated in hospitals by military medical personnel, however, increased from an average daily low of 4,753, in 1939 to 8,300 in 1940, an increase of 75%. Despite two influenza epidemics, incidence of pneumonia among 19,609 'flu cases was only 0.3%.

One result of the shift from a peace to wartime basis was the organization of a subdivision of Medical Intelligence and Tropical Medicine in the U. S. Army.

This unit is prepared for protection of soldiers' health at stations outside the United States. Surveys of such territory, the report states, have been made or are being made and the data filed for future use. The report praises the Medical Corps Reserve, "without which medical service rendered during the year would have been impossible."

In 1940 the Medical Department initiated a concentrated program of venereal disease control which has produced favorable results.

As in the past, automobile accidents continued to be the prime cause of death in the Army during the period, with air transport accidents second. Railroad accidents accounted for the fewest fatalities and tuberculosis, a minor factor now, was next to last on the list.

The report showed alcoholism to be a relatively minor health factor with fewer cases admitted during 1940 for treatment than at any time since 1916. About that time the report shows that alcohol addiction increased from practically non-existence to a fairly high rate in 1923 and remained rather constant

during the next 10 years. In 1933, a decline set in and continued to the 1940 low of approximately 2.7 per 1,000 strength.

Medical Department problems of mobilization were emphasized by a statement in the report of the large numbers of enlisted men who must be trained as technicians.

For an Army of 1,800,000, the report said, approximately 23,000 qualified dental, veterinary, sanitary, medical, surgical, pharmacy, laboratory and X-ray technicians are required. In addition, some 35,000 administrative specialists are necessary. Facilities existing at the time the report was prepared were sufficient to train 18,000 enlisted technicians in three-month courses.

Science News Letter, February 28, 1942

FISHERIES

Oysters, Like Cattle, Grow Fat in Rainy Years

OYSTERS, like cattle, depend on rain. They grow sleek and fat in rainy seasons, are lean and make poor eating in drought years, states the new annual report of the New Jersey Agricultural Experiment Station.

The reason is that oysters, like cattle, are animals and depend on plants for their food. The "pastures" on which oysters feed are minute one-celled plants that swarm in uncountable millions in the sea, as grass-blades pack meadows on the land. As pastures of the land depend on soil fertility, this microscopic "grass of the sea" depends on mineral nutrients in solution in the water. Most of these mineral salts are washed down from the land. When rains are copious and rivers are full, the inshore waters where oysters live are well fertilized; in droughty years they receive little of these necessary washings from the land, the micro-plants dwindle accordingly and the oysters go hungry.

The parallel breaks down, however, when it comes to seasons of destructive floods, when dams burst and valuable topsoil is washed away from the land. That is hard on agriculture ashore, but fine for aquiculture offshore. Some of the best oyster years on record have followed summers of notable floods.

There is a notable and obvious difference, too, between the grazing of livestock and the feeding of oysters. Cattle move about, feeding on stationary plants, but in the sea it is the animal oysters that stay put and the plants that swim or drift about until they are caught in the in-sucked current of water that each oyster keeps pumping through its shell.

The parallel picks up again when it comes to the variety of plants eaten respectively by cattle and oysters. Cattle eat almost anything green, but depend mainly on two large plant groups: grasses and legumes. Oysters feed on practically any microorganism they capture, but their mainstays are two large groups of microscopic plants, which have no common names but are known to scientists as diatoms and dinoflagellates.

A "fat" oyster deos not contain actual fat, as a fat steer does. Its reserve food is stored in the form of glycogen, or animan sugar—the same stuff that is stored in our own livers and the readiest reserve food that can be drawn upon in our own physiological emergencies. This liver-sugar in oysters is one of the things that makes them especially desirable in the human diet.

Science News Letter, February 28, 1942

It is possible to obtain *fat* in a crystalline form.

E
THE NAVY "E" pennant flying over the Bausch & Lomb plant is official recognition of accomplishment in Production for Victory. It symbolizes a singleness of purpose that justifies any sacrifice you or we may be called upon to make.

Today... I Helped a Man Make Sugar in Cuba

GEORGE HUGHES has never seen a field of cane bowing in the winds nor heard the crushing rumble of huge cylinders pressing out the juice. But, in the cube of sugar he drops into his cup, he can see the summation of his work. He is one of the many skilled workmen who help to make the Bausch & Lomb Saccharimeters.

The Bausch & Lomb Saccharimeter is made by American workmen, in an American plant. It measures standards of quality for the sugar that sweetens America's coffee—frees the sugar refiners of the New World from European dependence.

The Saccharimeter is but one of the thousands of scientific optical instruments made by Bausch & Lomb and widely used in the varied fields of education, science and industry, control, inspection and measurement.

Rarely are you directly aware of the benefits that such optical instruments render—yet they make your life fuller—richer—and vastly more complete. The superb beauty of today's motion pictures—the accuracy of medical diagnosis—the bullet-like speed of airplanes—testify to the advancements in optical science.

BAUSCH & LOMB
OPTICAL CO. • ROCHESTER, NEW YORK
ESTABLISHED 1853

AN AMERICAN SCIENTIFIC INSTITUTION PRODUCING OPTICAL GLASS AND INSTRUMENTS FOR NATIONAL DEFENSE, EDUCATION, RESEARCH, INDUSTRY AND EYESIGHT CORRECTION

BOTANY—HORTICULTURE

NATURE RAMBLINGS
by Frank Thone

Standardized Plant Names

SUPPOSE you have decided you'd like to have some bluebells in your garden this year. You call up your seed dealer or nurseryman and order the requisite number of plants. That is, you do it if you're a confiding soul.

For there are at least three genera of plants that share the name, bluebell, in loose common usage. There are the American bluebells, known also as lungworts, known to botanists as species of *Mertensia*. There is the bluebell of Scotland, which is a *Campanula*. And the name is sometimes misapplied to the grape hyacinth, whose technical name is *Muscari*. How are you and your dealer to reach a common basis?

Fortunately, there is an arbiter. It is a one-volume cyclopedia entitled *Standardized Plant Names*, prepared for the American Joint Committee on Horticultural Nomenclature by its editorial committee. The second edition, just published, contains more than 90,000 standard common and scientific plant names.

For gardeners and other persons making use of applied botany, the bluebell question is settled in favor of the American wild bluebells, the Mertensias. Sixteen species of these are listed. If you want the bluebell of Scotland, it is best to order it as such. Similar resolutions of other horticultural dilemmas are offered.

There are, in addition to authoritative listings of the scores or even hundreds of recognized horticultural varieties of such plants as roses, peonies, irises, etc., some special sections of particular interest. Thus, under Lumber Trade Names, you can determine just what tree species you are supposed to get a cut of, when you order such wood as Mexican mahogany or Fiji sandalwood. Or, if you are Borgia-minded, you can learn the botanical kinships of Socrates' hemlock, black nightshade and the deathcup mushroom from the section on Poisonous Plants.

Of more than passing interest is the introduction of a special symbol to indicate plants of importance in the wild, as food sources for game and song birds, mammals and fish.

Science News Letter, February 28, 1942

BIOCHEMISTRY

Analysis of Life Essence Is Now Made Possible

LARGE SCALE chemical analysis of the nucleoproteins, which might without exaggeration be called the essence of life itself, has been made possible through a simple method of extracting them from living cells with a strong salt solution, Drs. A. W. Pollister and A. E. Mirsky, of Columbia University and the hospital of the Rockefeller Institute for Medical Research, revealed at the recent meeting of the Genetics Society of America.

Nucleoproteins are what the nuclei of cells are made of, and since nuclei are at once the directors of physiological activities of the cells and the containers of the genes that determine the course of heredity, the importance of a better knowledge of their chemistry is obvious. Until now, however, it has been extremely difficult to obtain sufficient quantities of these substances to make satisfactory analyses.

Drs. Pollister and Mirsky stated: "We have found that when fresh spermatozoa or fresh cells of such organs as thymus, liver, kidney, or pancreas are soaked in a strong salt solution (5.8% sodium chloride) the nucleoprotein goes into solution in considerable amounts—adequate for very complete analyses.

"Microscopic examination of the cells after soaking shows that the nuclei, which are usually full of chromatin. are now empty—a direct demonstration, for the first time, that the extracted nucleoprotein comes from the chromatin. By this method we shall now be able to extract and to analyze the nucleoproteins from many types of cells.

"By comparing these nucleoproteins we shall be able to discover what chemical changes occur in the chromatin when, in development, embryonic cells become the specialized tissue cells such as those of glands, blood, muscle, brain, etc. This may bring us much nearer to an understanding of exactly how the genes in the chromosomes operate in development.

Science News Letter, February 28, 1942

Clip and mail this Coupon

To SCIENCE CLUBS OF AMERICA, 1719 N St., N. W., Washington, D. C.

☐ Send me information on organizing a science club.
☐ Enroll me as an associate of Science Clubs of America. 25 cents is enclosed.

To SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C.

☐ Start / ☐ Renew my subscription to SCIENCE NEWS LETTER for ☐ 1 year, $5 / ☐ 2 years, $7
(No extra postage to anywhere in the world)

To THINGS of Science, 1719 N St., N. W., Washington, D. C.

☐ Enter / ☐ Renew my membership in THINGS for ☐ 6 months, $2 / ☐ 1 year, $4

Name_____

Street Address_____

City and State_____

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

NEW YORK—Throughout the country Science Centers have been established where functions on a regional scale can be carried on by by clubs within convenient traveling distance of the Center. In New York State, for example, ten Centers have been established. Here are the schedules of forthcoming major events at these Centers:

(A Science Congress is a program given by members of science clubs. The members lecture to the assembled guests and demonstrate techniques they have mastered or exhibit new things they have developed. A Science Fair is an exhibition of projects which individuals or groups have completed. This information will enable you to visualize the activities here mentioned.)

BUFFALO, N. Y.—The Science Center for this section of New York State is at the Buffalo Museum of Science. Established in 1939, it serves five counties. From February 28 to March 8 it will hold the third Buffalo Salon of Photography. The Fourth Annual Science Congress of Western New York is scheduled for May 2. Both events are sponsored jointly by the Buffalo Museum and the Western Zone Science Section of New York State Teachers' Association. The Director of this Center is Harold T. Clement who also is Executive Secretary and Curator of Education at the Museum.

GLENS FALLS, N. Y.—A new Center has just started at Glen Falls. It serves four counties. On May 2 or 9 (the date is not yet established) a Science Congress will be held. The director of this Center is Robert King of Glens Falls High School.

MIDDLETOWN, N. Y.—The Science Clubs in seven counties in the vicinity of Middletown comprise the Middletown Science Center. On March 28 a Science Fair will be held by these clubs. This is the third fair to be held under the auspices of this Center at the local high school. The Director is Hollis F. Herrick of Middletown High School.

ONEONTA, N. Y.—Always extremely active is this science Center serving the affiliated clubs in five counties. A Fourth Annual Science Congress and Photographic Salon will be held on May 2 by the clubs in this Center. Mrs. Madeleine F. Coutant of Oneonta Senior High School is the Director.

PERU, N. Y.—Serving two counties the Peru Science Center, sponsored jointly by Peru Central High School and North Eastern Zone Science Teachers' Association, will hold a Science Fair on April 25. Merton Bromley of Peru Central High School is Director of this Center.

POTSDAM, N. Y.—Plans are now under way for a major activity for members of Science Clubs included in the Potsdam area. This Center serves four counties and is directed by Howard Vivyan of Potsdam High School. As soon as details are completed we will let you know of the nature of the activities.

ROCHESTER, N. Y.—Excellent demonstrations are always given at the Rochester Science Fairs. This year the Fair will be held from March 30 through April 3. This Center serves eleven counties and is under the direction of Harry A. Carpenter, Specialist of Science at the Rochester Public Schools.

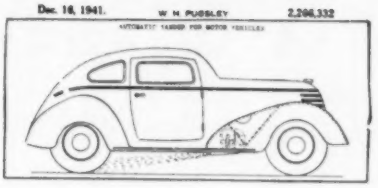
SCHENECTADY, N. Y.—Union College will be the site for this year's major activity covering the Science Clubs in the six counties served by the Schenectady Science Center. This center is directed by Robert E. Murray of Washington Irving Junior High School.

SYRACUSE, N. Y.—Defense bonds and stamps will be awarded for outstanding contributions to the program of the Syracuse Science Center. This will be a Congress held on April 25 for the Science Clubs in the thirteen counties served by this Center. The event will be held at Syracuse University. Dr. Richard R. Armacost of Syracuse University is Director.

Clubs are invited to become affiliated with SCA for a nominal $2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

New Machines And Gadgets

Novel Things for Better Living



Photographers can achieve economy in the use of acid rinse and fixing baths by means of a testing kit which tells whether a bath is exhausted or can still be used. The acetic acid used in these baths is priority material and difficult to obtain. The kit contains two bottles. The fluid of bottle "A," when added to an acid rinse, will turn purple if the acidity of the bath has fallen to a point where it can't be relied upon to be effective. The fluid of bottle "B," when added to a fixing bath, will produce a heavy yellow precipitate if the bath is exhausted.

Depth of focus, without stopping down a lens, is obtained by using, in conjunction with the regular lens, an auxiliary lens which, electrically vibrated, alters the focus from near to distant, 23,200 times a minute. Moving objects are thus kept in focus from four feet to infinity. With the usual movie camera, the performers have to keep within chalk lines or they get out of focus. In a close-up, the face may be sharp but a distant background is hazy. With the new lens, all objects are in uniform soft focus which, from a pictorial point of view, is considered an advantage. The device is not adapted for still pictures.

Valuable electrical insulating materials that withstand high temperatures are byproducts of once neglected compounds of silicon and carbon, called silicones. By adding oxygen, the molecules acquired the power of grouping themselves in chains or polymers, thus forming resins which can be used to insulate the wires for electric motors. The new insulation enables the motors to run at a higher temperature and thus to carry a heavier load than would otherwise be possible. In this way they conserve critical materials by giving more power with less machinery.

Scissors that cut equally well from point to pivot have now been patented. They have blades that curve in opposite directions so that the edges meet at approximately the same angle throughout the whole cutting stroke. This is a principle already widely applied in trimmers and other shearing tools.

Cigars by the yard are almost literally produced by an automatic cigar-making machine recently patented. At least the filler is produced in a continuous stream, afterwards to be cut off to the proper lengths, shaped and wrapped. This is an English invention.

Icy pavements will be less hazardous to the motorist whose car is equipped with the recently patented device shown in the illustration, even if his tires are retreaded with inferior rubber. By means of a rotary pump, this device throws sand under the wheels whenever the vehicle is starting up or making a quick stop. This automatic control is obtained by a pendulum which swings backward when the car is starting, or forward when the car is stopping. In either case, it opens a valve that starts the sanding motor.

Blackout window shades are now obtainable which are coated with a special light tight paper. Clamps are provided to hold the shade flush against the window sill, and clips to hold it all around tight against the window casing.

A short wave radio telephone transmitter and receiver, built just like the ordinary French telephone but considerably larger, is now available. However, the outfit is small enough to hold to the ear and mouth in the usual way, and weighs only four pounds. A metal rod extending upward from the receiver forms the antenna. Batteries are contained in the apparatus, and a switch on the handle enables the operator to change from transmitting to receiving, and vice versa. The range is somewhat more than a mile. Use of the device is of course subject to licensing by the Federal Communications Commission.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 98.*

Science News Letter, February 28, 1942

The common *deer mouse* can climb trees.

The U. S. Army Quartermaster Corps has introduced *substitutes* for 800 articles previously used.

Languages Made easy By Linguaphone

Speak SPANISH, PORTUGUESE, FRENCH—or any of 29 languages—in an amazingly short time by the simplified, direct Linguaphone conversational method. *In your own home* listen to the voices of native teachers who lead you by easy steps to speak, read and write the language of your choice. Endorsed by the foremost language teachers. Used by a million home-study students. *Send for FREE Book*

LINGUAPHONE INSTITUTE
31 R.C.A. Building New York City

•First Glances at New Books

JOURNALISM—GENERAL SCIENCE

AMERICAN NEWSPAPER REPORTING OF SCIENCE NEWS—Hillier Krieghbaum—*Kansas State College of Agriculture and Applied Science, Manhattan, Kans.*, 73 p., free from Kansas State College. The first comprehensive account of the growth of the popularization of science in the American Press. The author is a newspaper man himself and his participation in science reporting is modestly omitted. This bulletin tells the story, not only of the epochs since the World War, but the beginnings of newspaper science reporting in 1690 and the middle period in science reporting enlivened by the moon hoax and many other more useful newspaper exploits. One of the five chapters is devoted to Science Service.

Science News Letter, February 28, 1942

SOCIOLOGY

JEWS IN A GENTILE WORLD, The Problem of Anti-Semitism—Isacque Graeber and Steuart Henderson Britt and others—*Macmillan*, 436 p., $4. A study by scientists from such fields as sociology, psychology, economics, political science and history, or the "recurring social malady of anti-Semitism." They have gone at this troublesome illness of society in much the same way that the public health expert studies a physical endemic disease—considering its origins, exact nature, conditions which permit its growth and effective means of control.

Science News Letter, February 28, 1942

BOTANY—HORTICULTURE

STANDARDIZED PLANT NAMES, A Revised and Enlarged Listing of Approved Scientific and Common Names of Plants and Plant Products in American Commerce or Use (2d ed.)—Harlan P. Kelsey and William A. Dayton, eds.—*J. Horace McFarland Company*, 675 p., $10.50. See page 142.

Science News Letter, February 28, 1942

GENERAL SCIENCE

COLLEGE AND UNIVERSITY MUSEUMS, A Message for College and University Presidents—Laurence Vail Coleman—*American Association of Museums*, 73 p., illus., $1.25. This is a study of art, science and history museums and their place on the campus—and it is frankly aimed at suggesting to college presidents and trustees what should be done. There are at least 500 science museums in American colleges and universities, 80 of which are outstanding and 22 with their own buildings. Less than a dozen are on chemistry and physics, most in the natural sciences.

Science News Letter, February 28, 1942

EMBRYOLOGY

EMBRYOLOGY OF THE RHESUS MONKEY (MACACA MULATTA)—*Carnegie Institution of Washington*, 66 p., illus., $1. A group of five papers, which together constitute a connected history of the development of this important experimental primate, from the first maturation division of the ovum to birth. There are 50 beautifully executed photographic plates.

Science News Letter, February 28, 1942

ANTHROPOLOGY

HOW MAN BECAME A GIANT—M. Ilin and E. Segal; translated by Beatrice Kinkead—*Lippincott*, 270 p., illus., $2. A popular presentation of cultural anthropology, in the spirit of "The Golden Bough," intended for children of about junior high school age.

Science News Letter, February 28, 1942

VETERINARY MEDICINE

SOME COMMON DISEASES OF THE HORSE—George H. Conn—*Orange Judd*, 187 p., illus., $1.50; SOME COMMON DISEASES OF CATTLE—George H. Conn—*Orange Judd*, 176 p., illus., $1.50. Companion books, of high usefulness to farmers, stockmen, etc. Common diseases are described in simple language and practical remedies suggested.

Science News Letter, February 28, 1942

GENERAL SCIENCE

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION AND FINANCIAL REPORT OF THE EXECUTIVE COMMITTEE OF THE BOARD OF REGENTS FOR THE YEAR ENDED JUNE 30, 1941—*Govt. Print. Off.*, 136 p., illus., 25c.

Science News Letter, February 28, 1942

GEOLOGY—EVOLUTION

THE DAYS OF CREATION—Willy Ley—*Modern Age Books*, 275 p., $2.75. A literary treatment of historical geology and paleontology, divided into six great phases which are correlated with the six "days" of Genesis; not, however, in the naive manner of early "reconciliationists" but rather in allegorical fashion.

Science News Letter, February 28, 1942

ZOOLOGY

THE AMPHIBIANS AND REPTILES OF BRITISH HONDURAS—Karl P. Schmidt—*Field Museum of Natural History*, 35 p., illus., 40c.

Science News Letter, February 28, 1942

POLITICAL SCIENCE

THE PHILIPPINES, A Study in National Development—Joseph Ralston Hayden—*Macmillan*, 984 p., illus., $9. A careful analysis, written by the James Orin Murfin professor of political Science of the University of Michigan, who was vice-governor of the Philippines from 1933 to 1935. The war, of course, has radically changed the political situation, and discussion of Philippine independence has at present historical interest only.

Science News Letter, February 28, 1942

MEDICINE

EVERYDAY NURSING FOR THE EVERYDAY HOME—Elinor E. Norlin and Bessie M. Donaldson—*Macmillan*, 306 p., $2.50. See page 136.

Science News Letter, February 28, 1942

CHEMISTRY

A TEXTBOOK OF ELEMENTARY QUALITATIVE ANALYSIS (3d ed.)—Carl J. Engelder.—*Wiley*, 344 p., $2.50. Third edition of a successful college text by the professor of analytical chemistry of the Universtiy of Pittsburgh.

Science News Letter, February 28, 1942

AERONAUTICS

AMERICAN AVIATION DIRECTORY, Aviation Officials and Companies, United States, Canada & Latin America (Vol. 2, No. 2, Second Half 1941)—Wayne W. Parrish and David Shawe, eds.—*American Aviation Associates, Inc.*, 387 p., $5 per year (2 editions); Single copy, $3.

Science News Letter, February 28, 1942

TECHNOLOGY

PLASTICS CATALOG, 1942—*Plastics Catalogue Corporation*, 624 p., illus., $5. The annual handbook of the expanding technology and industry of plastics, with an accent this year on the use of these materials in the war effort. Synthetic rubbers are included in this edition.

Science News Letter, February 28, 1942

RADIO

RADIO RESEARCH, 1941—Paul F. Lazarsfeld and Frank N. Stanton, eds.—*Duell, Sloan and Pearce*, 333 p., $2.50.—Inquiries into the state of the public mind with regard to radio conducted by Columbia University's Office of Radio Research under Rockefeller grants. The six studies cover foreign language broadcasts, popular music, symphony music, how young people get their news, and the relation of the farmer to radio.

Science News Letter, February 28, 1942